

Appl. No. : 09/990,075  
Filed : November 21, 2001

**AMENDMENTS TO THE CLAIMS**

Please amend the Claims as follows. Insertions are shown underlined while deletions are ~~struck through~~.

1 (currently amended): A method for manufacturing a homeotropic alignment liquid crystal film, comprising the steps of:

*a1*  
~~wherein coating~~ a side chain type liquid crystal polymer comprising a monomer unit (a) containing a liquid crystalline fragment side chain and a monomer unit (b) containing a non-liquid crystalline fragment side chain ~~is coated~~ on a substrate on which a vertical alignment film is not ~~prepared~~formed, said liquid crystal polymer being capable of homeotropic alignment solely by heating;

after the substrate is coated with the liquid crystal polymer which is in a liquid crystal state, homeotropically aligning the liquid crystal polymer by heating; and

~~fixing the liquid crystal polymer is fixed while maintaining an resulting homeotropic alignment state after of the liquid crystal polymer is homeotropically aligned in liquid crystal state.~~

2 (currently amended): ~~The method for manufacturing a homeotropic alignment liquid crystal film according to claim 1, wherein a material of asaid substrate is a polymer, glass or metal.~~

3 (canceled)

4 (canceled)

5 (canceled)

6 (canceled)

7 (canceled)

8 (canceled)

9 (currently amended): A method for manufacturing a homeotropic alignment liquid crystal film, comprising the steps of:

~~wherein the coating a homeotropic alignment liquid crystalline composition according to claim 7 is coated on a substrate on which a vertical alignment film is not prepared~~formed, said composition being capable of homeotropic alignment solely by heating and comprising a side chain type liquid crystal polymer and a photopolymerizable liquid crystal compound;

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subsequently after the substrate is coated with the liquid crystalline composition which is in a liquid crystal state, homeotropically aligning the homeotropic alignment-liquid crystalline composition is homeotropically aligned in liquid crystal state by heating;

fixing a resulting homeotropic alignment state of the liquid crystalline composition;  
and

is applied applying an optical irradiation to the liquid crystalline composition after fixed in a state of an alignment state being maintained to fix the liquid crystalline composition.

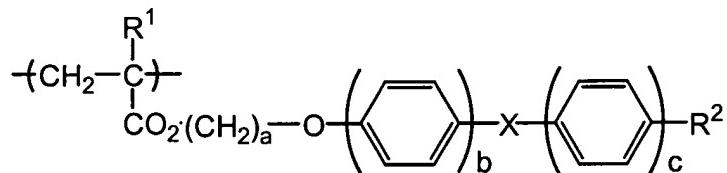
10 (currently amended): The method for manufacturing a homeotropic alignment liquid crystal film according to claim 9, wherein a material of the substrate is a polymer substance, glass or metal.

11 (canceled)

12 (canceled)

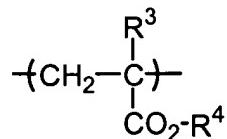
13 (canceled)

14 (new): The method according to claim 1, wherein said monomer unit (a) comprises a monomer unit represented by the following formula:



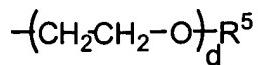
wherein R<sup>1</sup> is a hydrogen atom or a methyl group, a is a positive integer of 1 to 6, X is -CO<sub>2</sub>- group or -OCO- group, R<sup>2</sup> is a cyano group, an alkoxy group with 1 to 6 carbon, fluoro group or alkyl group with 1 to 6 carbon, and b and c are integers of 1 or 2 respectively; and

said monomer unit (b) comprises a monomer unit represented by the following formula:



wherein R<sup>3</sup> is a hydrogen atom or a methyl group, R<sup>4</sup> is an alkyl group with 1 to 22 carbon, a fluoroalkyl group with 1 to 22 carbon, or a monomer unit represented by the following formula:

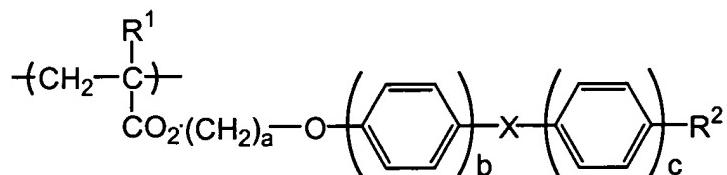
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wherein d is a positive integer of 1 to 6, and R<sup>5</sup> is an alkyl group with 1 to 6 carbon.

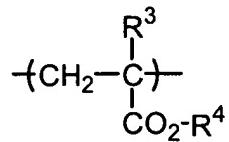
15 (new): The method according to claim 1, wherein said heating is conducted at 70°C - 200°C.

16 (new): The method according to claim 9, wherein said side chain type liquid crystal polymer comprises a monomer unit (a) containing liquid crystalline fragment side chain and a monomer unit (b) containing non-liquid crystalline fragment side chain, said monomer unit (a) comprising a monomer unit represented by the following formula:

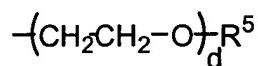


wherein R<sup>1</sup> is a hydrogen atom or a methyl group, a is a positive integer of 1 to 6, X is -CO<sub>2</sub>- group or -OCO- group, R<sup>2</sup> is a cyano group, an alkoxy group with 1 to 6 carbon, fluoro group or alkyl group with 1 to 6 carbon, and b and c are integers of 1 or 2 respectively; and

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said monomer unit (b) comprising a monomer unit represented by the following formula:



wherein R<sup>3</sup> is a hydrogen atom or a methyl group, R<sup>4</sup> is an alkyl group with 1 to 22 carbon, a fluoroalkyl group with 1 to 22 carbon, or a monomer unit represented by the following formula:



wherein d is a positive integer of 1 to 6, and R<sup>5</sup> is an alkyl group with 1 to 6 carbon.

17 (new): The method according to claim 9, wherein said heating is conducted at 70°C - 200°C.